What is claimed is:

1. An air conditioning unit for a vehicle, comprising:

an air conditioning casing having flow paths therein;

an evaporator arranged in the air conditioning casing and having substantially a U-shape;

an outer flow path provided on an outer side of the U-shaped evaporator on one of an upstream and downstream sides of an air flow of the U-shaped evaporator;

an inner flow path provided on an inner side of the U-shaped evaporator on one of the downstream and upstream sides of the air flow of the U-shaped evaporator; and

a heater core arranged on the downstream side of the air flow of the U-shaped evaporator.

2. The air conditioning unit of claim 1, wherein:

the U-shaped evaporator is formed of a plurality of evaporators.

3. The air conditioning unit of claim 2, wherein:

the U-shaped evaporator is formed of a center evaporator and side evaporators arranged on each side of the center evaporator.

4. The air conditioning unit of claim 3, wherein:

the outer flow path is on the upstream side of the air flow of the U-shaped evaporator and the inner flow path is on the downstream side of the air flow of the U-shaped evaporator; and

the heater core is arranged to face the center evaporator.

5. The air conditioning unit of claim 4, wherein:

the heater core is arranged in a space defined on the inner side of the U-shaped evaporator.

6. The air conditioning unit of claim 5, wherein:

the heater core is inclined relative to the center evaporator of the U-shaped evaporator and is arranged to face the center evaporator.

7. The air conditioning unit of claim 6, wherein:

the U-shaped evaporator is arranged in an upright posture and the heater core is inclined relative to the center evaporator and is arranged to face the center evaporator.

8. The air conditioning unit of claim 4, further comprising:

a center space provided between the center evaporator and the heater core, configured to merge air flowing in the inner flow path so that the merged air in the center space may be entirely passed through the heater core.

9. The air conditioning unit of claim 4, further comprising:

a center space provided between the center evaporator and the heater core, configured to merge air flowing in the inner flow path and pass the merged air through the heater core;

a bypass configured to guide part of the air in the center space toward a

downstream space behind the heater core by bypassing the heater core; and

a bypass door arranged in the bypass, configured to open and close the bypass.

10. The air conditioning unit of claim 4, further comprising:

a bypass formed for an inner flow path provided for each of the side evaporators, configured to directly guide at least part of the air passed through the side evaporators into a downstream space behind the heater core by bypassing the heater core; and

a bypass door arranged in the bypass, configured to open and close the bypass.

11. The air conditioning unit of claim 9, further comprising:

an air mixing space provided on the downstream side of the heater core, configured to mix air passed through the bypass with air passed through the heater core.

12. The air conditioning unit of claim 10, further comprising:

an air mixing space provided on the downstream side of the heater core, configured to mix air passed through the bypasses with air passed through the heater core.

13. The air conditioning unit of claim 5, wherein the outer flow path provided on the outer side of the evaporator is a U-shaped spacecomprising a center path provided on the outer side of the center evaporator and first and second side paths provided on the outer sides of the side evaporators, respectively, the air conditioning unit further comprising:

an air inlet formed at a corner where the center path connects to the first side path, configured to guide air in a straight extending direction of the center path.

14. The air conditioning unit of claim 13, further comprising:

a path contraction formed at a connection between the air inlet and the center path, configured to increase air distribution to the first side path.

15. The air conditioning unit of claim 13, wherein:

the first and second side paths are tapered so as to become narrower toward front ends thereof.

16. The air conditioning unit of claim 13, further comprising:

a corner path curved along a corner between the center path and the second side path, the corner path being curved by rounding an outer wall of the corner path.

17. The air conditioning unit of claim 13, further comprising:

a smoother arranged at each intersection between the center evaporator and the side evaporators, configured to smooth an air flow.

18. The air conditioning unit of claim 13, wherein:

the air conditioning unit is arranged at a widthwise center of the vehicle in an instrument panel in front of a front seat of the vehicle so that an opening of the U-shaped evaporator and the heater core are oriented to the rear of the vehicle and so that the air inlet is oriented in a widthwise direction of the vehicle.

19. An air conditioning system for a vehicle, comprising an air conditioning unit

and a fan unit, the air conditioning unit including:

an air conditioning casing having flow paths therein;

an evaporator arranged in the air conditioning casing and having substantially a U-shape;

an outer flow path formed between the U-shaped evaporator and the air conditioning casing along the U-shaped evaporator, the outer flow path having a center path and first and second side paths and a substantially U-shape, and being upstream from the U-shaped evaporator in an air flow direction;

an inner flow path provided on the inner side of the U-shaped evaporator downstream from the U-shaped evaporator in the air flow direction;

a heater core arranged downstream from the U-shaped evaporator in the air flow direction; and

an air inlet provided for the air conditioning casing at a corner between the center path of the outer flow path and the first side path of the outer flow path, configured to guide air in a straight extending direction of the center path,

the U-shaped evaporator being arranged to open toward a rear of the vehicle, the air inlet being oriented in a widthwise direction of the vehicle, the air conditioning unit and the fan unit being arranged side by side in the widthwise direction of the vehicle.

20. The air conditioning system of claim 19, wherein:

the air conditioning unit is arranged at a widthwise center of the vehicle in an instrument panel in front of a front seat of the vehicle, and the fan unit is arranged beside the air conditioning unit in the widthwise direction of the vehicle.